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Government investment in public health policies can elicit strong responses from individuals. These responses can promote, reduce and even reverse the expected benefits of the policies. Therefore, projections of individual responses to policy can be important ingredients into policy design. Yet our foresight of individual responses to public health investment remains limited. This paper formulates a population game to explore how individual and government investments impact the health commons. We model the problem of infectious disease management through reductions in transmission risk for a disease that does not elicit immunity. We identify three common relationships between government and individual investments and determine how each relationship alters policy responses and health outcomes. We also provide general bounds on the magnitude of practical investment by individuals. The methods we present can be extended to address specific policy problems where public responses are expected to impose key feedbacks. (Received August 02, 2011)